In this case the additions are 0, 8, 16, 20, 24, 24, 20, 16, 8, 0; and if these be added to any other consecutive 11 terms (the 1st term having an *odd* index), they produce the same effect as if the differences were reversed; and the resulting numbers have the property of the terms equidistant from the centre, being connected by their roots, having the relation so frequently mentioned. It may be further remarked, that the numbers produced by reversing the differences are the initial numbers from which, by adding 2, 2, 4, 4, &c., 61 may be formed of the squares, which make the differences of its exterior roots 10, 9, 8, &c.

1	2	3	4	5	6	7	8	9	10
11	**13**	**15**	**19**	**23**	**29**	**35**	**43**	**51**	**61**
	2	2	4	4	6	6	8	8	10
0,0,3,1	0,0,3,2		−1,0,3,3		−2,0,3,4		−3,0,3,5		−4,0,36

1	2	3	4	5	6	7	8	9
21	**23**	**25**	**29**	**33**	**39**	**45**	**53**	**61**
	2	2	4	4	6	6	8	8
0,2,4,1								−4,2,4,5

and so of all the others.

The matter referred to in this Postscript tends to strengthen the suggestion already made, that the properties of numbers referred to are connected with the mysterious and abstruse properties to which Fermat referred as enabling him to prove the theorem he announced of the Polygonal Numbers.

III. "Observations on the Mer de Glace."—Part I. By JOHN TYNDALL, Ph.D., F.R.S. &c. Received June 10, 1858.

(Abstract.)

In this paper the author communicates the first part of a series of observations upon the Mer de Glace, made during a residence of six weeks at the Montanvert last summer *. He corroborates the laws regarding the swifter flow of the central portions of the ice-stream, first established by Prof. Forbes, and shows how the velocity changes as the width of the glacier varies. The Mer de Glace moves through a valley which twice turns a convex curvature to the east, and once to the west. The points of swiftest motion at these curves are found to be not central, but thrown to that side

* During the whole of which period he was most ably assisted by his friend Mr. T. A. Hirst.

of the valley towards which the glacier turns its convex curvature. It has hitherto been believed that the portion of the Mer de Glace derived from the Glacier du Géant moved swiftest. The author shows that the tributaries which form the Mer de Glace lose their individuality in the trunk stream, the latter flowing as if it proceeded from a single source. The point of maximum motion is sometimes on the eastern, sometimes on the western side of a line drawn along the centre of the glacier, the change from side to side depending upon the curvature of the valley. The locus of the point of swiftest motion in a glacier which moves through a sinuous valley, is exactly similar to that of a river moving through a sinuous channel; it forms a curve more deeply sinuous than the valley itself, and crosses the centre of the valley at each point of contrary flexure.

A rare opportunity of determining the comparative velocities of a glacier at its surface and close to its bed, was furnished by a precipice of ice 140 feet in height, which was exposed near the Tacul. Three stakes were fixed in this precipice, one at the top, the other near the bottom, and a third in the face of the precipice at a height of nearly 40 feet above the bottom; the velocities of the three stakes were found to be 6 inches, 4·59 inches, and 2·56 inches per day; thus furnishing additional proof of the correctness of the law first predicted by Prof. Forbes, and confirmed subsequently by his own observations and those of M. Martins.

Attention is drawn to the immense exertion of force necessary to drive the glacier through the neck of the valley at Trelaporte. The sum of the width of the three tributaries of the Mer de Glace before they mutually act upon each other is 2597 yards. All these are squeezed through a gorge at Trelaporte, measuring 893 yards across. The Glacier de Léchaud, which, before its junction with the Talèfre, possesses a width of upwards of 37 chains, is squeezed at Trelaporte to a driblet less than 4 chains wide.

As a natural consequence of this obstacle in front, the Glacier du Géant is generally in a state of longitudinal compression. But the mechanical meaning of this term must be that the points behind are incessantly advancing upon those in front,—the distance between two points upon the axis of the glacier being thus gradually diminished. The daily motion of these points upon the axis of this glacier was determined, which led to the remarkable result, that a section of the glacier 1000 yards in length is shortened by the thrust to which it

is subjected, at the rate of 8 inches a day; which, if the action were uniform at all seasons, would amount to 240 feet a year.

The author also describes a system of remarkable bands of white ice which he observed to sweep across the Glacier du Géant in the same general direction as the "dirt-bands." He traced these bands to the following origin. The streams which flow upon the glacier in its upper portions, cut deep channels in the ice; these channels, during the winter, become gorged with snow, which is afterwards compressed to a highly resistant white ice during the descent of the glacier. Similar bands were also observed in a most remarkable position at the base of the Talèfre cascade; and here also he found the glacier crumpled into a series of protuberances, one consequence of the crumpling being the production of a "backward" as well as a forward "dip" of the veined structure. A similar system of protuberances occurs on the Glacier du Géant; and here also the author found the same structure dipping backward as well as forward. The cause of the crumpling is assigned in the paper.

The physical quality in virtue of which ice is able to change its form in the manner indicated by the observations is next inquired into; and it is shown by measurements carried out upon the glacier itself, that no quality which could with propriety be called viscosity is possessed by glacier ice. All the phenomena appear to be reconciled by reference to the fragility of ice at a temperature of 32° F., coupled with its power of regelation. The intestine motion of the parts is no doubt aided to some extent by the partial liquefaction of the ice by pressure; a fact first publicly pointed out by Mr. James Thomson, and proved experimentally by Prof. William Thomson and the author.

June 3, 1858.

The LORD WROTTESLEY, President, in the Chair.

The Annual General Meeting for the Election of Fellows was held this day,

The Statutes respecting the election of Fellows having been read, Sir George Back and Mr. Gwynn Jeffreys were, with the consent of the Society, appointed Scrutators to assist the Secretaries in examining the lists.